Audit office size, audit quality and audit pricing: evidence from small- and medium-sized enterprises

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Audit Office Size, Audit Quality and Audit Pricing:

Evidence from Small and Medium Sized Enterprises

Abstract

Using Swedish data we investigate how audit quality and audit pricing vary with audit firm and office size. In contrast to prior studies, we use disciplinary sanctions issued against auditors not meeting the quality requirement as the measure of audit quality. We find no significant differences in the likelihood of sanctions between Big 4 audit firms and the fifth and sixth largest audit firms in Sweden (Grant Thornton and BDO). We refer to these collectively as 'Top 6'. However, we find that the probabilities of warnings or exclusions from the profession are much higher for non-Top 6 auditors in Sweden than for Top 6 auditors. Furthermore, we find a strong negative association between the likelihood of sanctions and audit office size for non-Top 6 auditors. This association is insignificant for Top 6 audit firms. Audit fees follow a similar pattern and indicate that larger audit firms and offices put in more effort or have greater expertise. These results suggest that audit quality is differentiated in the private segment market. However, contrary to prior studies, our results suggest that the important dimensions are Top 6 versus non-Top 6 and the office size of non-Top 6 audit firms.

Keywords: audit quality; audit offices; audit fees; private companies; disciplinary sanctions; top 6 audit firms

1. Introduction

The purpose of this study is to investigate whether, and possibly how, audit quality and audit pricing vary between audit firms and audit offices. We study quality and pricing in the private audit market and use disciplinary sanctions as the measure of audit quality.[1] We expect an inverse relationship between high audit quality and the propensity of being subject to disciplinary sanctions. As sanctions are issued against auditors who do not meet the required standards, we will identify auditors at the lower end of a low-high quality continuum. Prior studies have focused on the association between office size and audit quality in publicly listed companies (e.g., Francis and Yu 2009; Choi *et al.* 2010). The association between office size and audit quality in unlisted companies is a topic that has not yet been researched. The main contributions of this study are an analysis of unlisted companies and an analysis of the association between audit quality and office size for different categories of audit firms.

This study uses data from Sweden. The advantage of using Swedish data is that disciplinary sanctions against individual auditors are available which allows us to link sanctions to audit offices and audit firms. Another important characteristic is the statutory audit requirement for all limited companies. Following this requirement, auditors have on average a large number of relatively small audit assignments.[2] Consequently, there are large numbers of small audit firms and the major audit firms have established local offices in every region of the country. The major audit firms also have a significant market share in the private company segment. Thus, an investigation into how the size of the audit firm and the size of the audit office are associated with disciplinary sanctions and audit fees in the Swedish private firm audit market is warranted for a variety of reasons.

First, prior studies on audit quality have frequently used measures of earnings management as the indicator of audit quality (e.g., Vander Bauwhede and Willekens 2004; Francis and Yu 2009; Choi *et al.* 2010). These measures are based on components of financial statements and reflect the joint efforts of management and auditors. It is inherently difficult to separate audit effects from the

management's accounting practices. Also, in contrast to using disciplinary sanctions, it is not possible to say anything about the absolute level of audit quality or determine whether audit performance is below standard (Francis and Yu 2009). Decisions regarding disciplinary sanctions taken by the Supervisory Body of Public Accountants (SBPA) in Sweden are based on a broad range of quality aspects of both the audit process and professional conduct. Disciplinary sanctions are only concerned with auditor conduct and are a consequence of sub-standard performance in one or (typically) multiple audit assignments. While recognising that SBPA does not capture all the cases of audit failure, it is reasonable to assume that sanctions become much more likely if the quality of services is low. Ultimately, disciplinary sanctions have the advantage over earnings management indicators in that they provide a direct measure of absolute audit quality.

Second, although extensive literature is available about audit and price differences between Big 4 and non-Big 4 auditors for listed companies (Becker *et al*.1998; Kim *et al*. 2003; Choi *et al*. 2010), significantly less research has been carried out on privately owned unlisted companies (Maijoor and Vanstraelen 2006; Van Tendeloo and Vanstraelen 2008). In general, empirical evidence from European private firms provides rather weak support for superior quality among Big 4 audit firms. The available literature has almost solely focused on the Big 4/non-Big 4 dichotomy. However, there are some non-Big 4 audit firms that also belong to international networks. From the existing research on private firms it is not clear whether those auditors provide the same quality as Big 4 auditors. We therefore complement the existing literature on quality differentiation at firm level by specifically studying the quality and pricing of the fifth and sixth largest audit firms in Sweden, namely Grant Thornton and BDO. In this study, we use 'Top 6 auditors' when collectively referring to the Big 4 audit firms and Grant Thornton and BDO as one category of auditors.

Third, the evidence pertaining to the association between audit office size and audit quality is based on listed companies. Francis and Yu (2009) studied the effects of office size using a sample of Big 4 audited listed companies. Choi et al. (2010) studied samples of Big 4 and non-Big 4 listed

companies, but did not study the association between office size and audit quality separately for the categories. The suggested reasons for an association between audit office size and audit quality are that larger offices have more collective experience, more peers with whom to consult and greater in-house expertise than smaller ones (Francis and Yu 2009). However, audit office effects might be even more apparent in assignments in private companies, because in such cases auditor are then conducted by, in the one extreme, sole practitioners working alone in their offices and, in the other extreme, by auditors based at large offices of Top 6 audit firms. The lack of opportunities to harness expertise from other offices implies that audit office effects are even more prevalent in non-Top 6 audit firms. In this study, we analyse office effects separately for Top 6 and non-Top 6 audit firms.

Briefly, our results suggest that there is a quality differentiation in the Swedish audit market. We analysed three categories of audit firms: i) Big 4, ii) Grant Thornton and BDO and iii) non-Top 6 and found that the likelihood of a disciplinary sanction is significantly higher for auditors from non-Top 6 audit firms than those from Top 6 firms. The fees of Top 6 auditors are also significantly higher. Furthermore, among the non-Top 6 auditors, there is a significant negative association between the likelihood of a disciplinary sanction and the size of the audit office, which suggests that a larger collective competence and in-house expertise is positively associated with audit quality. Our results also show that fees are positively associated with audit office size.

The remainder of the study is structured as follows. Section 2 presents the Swedish institutional setting. Section 3 contains the hypotheses. Section 4 includes the research design and the data. Section 5 presents the empirical results and section 6 concludes the study.

2. Institutional setting and disciplinary sanctions in Sweden

The Eighth Directive of the European Union (EU 2006) gives member states the right to exempt smaller entities from the statutory audit requirement.[3] Up to November 2010 Sweden had not used this possibility, but instead required all limited liability companies to be audited (Companies Act,

Chapter 9, para.1). However, the Swedish Parliament (*Riksdagen*) has now decided to exempt the smallest firms from the audit requirement (Swedish Government, 2010).[4] In addition to the 330,000 limited liability companies that are audited annually following the Company Act, auditing is also required in some other organisational forms.[5] The sample used in this study covers the period when all companies had to be audited regardless of their size.

The conduct of the audit is regulated by law as well as by auditing standards issued by the auditors' professional body FAR, the 'Institute for the Accounting Profession'.[6] Since 2004, national auditing standards have been based on the International Standards of Auditing (ISAs), with a few adjustments in order to make them consistent with Swedish law. However, starting from 2011, there has been full adoption of ISA in Sweden. Sweden has a two-tier system of auditor qualifications whereby auditors first become an approved and then an authorised auditor. In 2009 there were 2,222 authorised auditors and 1,772 approved auditors. However, approved and authorised auditors with the relevant auditing qualifications are entitled to audit all companies regardless of their size.[7]

The audit market is dominated by the Big 4 audit firms. The Big 4 firms reported revenues of 1.18 billion euro in 2009 and employ approximately 58 % of the authorised auditors and 40 % of the approved auditors (Affärsvärlden 2011, p.80-81).[8] The market domination by large audit firms is further demonstrated by the fact that Big 4 audit firms earned 83.7 % of all revenues reported by the ten largest audit firms in 2009. The Top 6 audit firms employ 67 % of the authorised auditors and 49 % of the approved auditors in Sweden, and earned 95.3 % of revenues reported by the top ten audit firms in 2009.[9] However, there are also a large number of sole proprietors on the market. It should also be noted that in Sweden audit firms can be found throughout the country and there are a large number of local offices.[10]

The Eighth Directive (EU 2006) states that the monitoring system of auditors must rest on two pillars: effective sanctions and public disclosure of sanctions. However, there is considerable leeway for national differences in terms of monitoring. In Sweden, SBPA is responsible for monitoring approved and authorised auditors. SBPA is a governmental authority under the Ministry of Justice that arranges exams, issues approval or authorisation, supervises and investigates and decides on disciplinary sanctions and other measures against auditors and registered public accounting firms. The overall function of SBPA is to ensure that professional ethics for accountants and generally accepted auditing standards are developed in an appropriate way.

The most important task of SBPA is the supervision of auditors and audit firms. SBPA conducts quality control investigations, both on its own initiative and after having received complaints, with the purpose of ensuring the level of audit quality and reporting quality. Their own investigations have two forms: regular quality inspection and inspections directed at high risk groups. SBPA carries out regular inspections on auditors with public clients every third year. The regular quality inspection of auditors without public assignments has been delegated to FAR and takes place every sixth year. However, SBPA is involved in designing the investigations (scope, orientation, methodology etc.) and decides on the required qualifications for individuals conducting the inspections. SBPA also performs random checks on a sample of the inspections performed by FAR. FAR has to report to SBPA if major deficiencies are identified during an inspection, or if a member refuses an inspection.[11] If any of the inspections performed by SBPA reveal substantial drawbacks, or if a major deficiency is reported by FAR, a disciplinary investigation will be opened.

Importantly, SBPA also receives complaints that lead to investigations and disciplinary cases. These complaints can come from clients, banks, shareholders, trade partners, the Swedish Economic Crime Agency, the Swedish Enforcement Agency, tax authorities and others.[12] Decisions about disciplinary sanctions are taken by nine members, with the chairman and vice chairman being the judges in the Court of Appeal. Two members are active and qualified auditors

with 25 years of experience in the field. All the other members have professional experience of auditing. Current members include the legal counsel of the tax authorities, the administrative manager at the Financial Supervisory Authority, an experienced lawyer who works as liquidation trustee, an experienced lawyer at the Confederation of Swedish Enterprise and a former CEO of the Swedish Securities Dealers Association (SSDA). The fact that the majority of members are judges and lawyers should help to minimise the risk of large audit firms having an undue influence on the audit decision. The possible sanctions based on the degree of seriousness are (i) a reprimand, (ii) a warning and (iii) the withdrawal of licence. The decision taken by SBPA may be appealed via the Administrative Court. A leave of appeal is required in order to take the case to the Supreme Administrative Court.

In the period 2005-2009, disciplinary sanctions were issued against approximately 6.9 % of the qualified auditors.[13] Incentives to perform high audit quality and thereby reduce the risk of being subject to sanctions are likely to be related to the costs associated with sanctions. However, the extent to which negative consequences follow on from a reprimand or warning is somewhat debatable. According to SBPA chief Peter Strömberg, large audit firms have mechanisms in place that are supposed to ensure reduced compensation for an auditor who is subject to sanctions (Bursell 2010). Sanctions are also believed to be associated with negative reputation effects. Withdrawal of licence is undoubtedly costly, as this means that the auditor can no longer serve as an auditor. The risk of losing one's licence to practise as an auditor is relative low, however. Between 2005 and 2009 SBPA withdrew the licences of 41 qualified auditors, which is the equivalent of 1 % of the population. Apart from disciplinary sanctions, a few court cases have been brought against auditors and out-of-court settlements have also occurred.

3. Literature and hypothesis development

3.1 Audit failures, audit quality and independent oversight

Basically, the value of auditing stems from the auditor detecting and correcting/revealing material misstatements in the financial information presented. Audit quality can be conceptualised as a continuum ranging from very low to very high audit quality (see Francis 2004, p.346). At the very low end of the quality continuum we have (outright) audit failures. Basically audit failures fall into two categories: when generally accepted accounting principles are not enforced by the auditor (GAAP failure) and when an auditor fails to issue an accurate report (audit report failure). For the auditor who regularly delivers high quality, the risk of such failures will be substantially reduced compared to an auditor performing at low quality. In other words, there is an inverse relationship between audit failure and high audit quality (see Palmrose 1988; Francis 2004). Failures can be identified from litigations, oversight quality inspections and restatements (see Francis 2004).

Researchers have recognised the usefulness of self-regulated peer reviews and independent oversight inspections for signalling perceived and actual audit quality (Palmrose 1988; Hilary and Lennox 2005; Casterella *et al*. 2009; Van de Poel *et al*. 2009). As the auditing profession globally has recently switched from self-regulation to independent oversight, research on public oversight is still in its infancy. US based research on the effectiveness of public oversight provides somewhat mixed evidence. For example, Lennox and Pittman (2010) found audit firm market shares to be insensitive to the content of PCAOB reports, while Carcello *et al*. (2011) showed that PCAOB inspections resulted in a reduction of client's earnings management. Recent research undertaken in Europe into the monitoring of auditors indicates that public oversight is effective in signalling audit quality. Based on data from the Netherlands, Van de Poel *et al*. (2009) found that companies audited by an audit firm with negative inspection outcome had lower accruals than companies audited by an audit firm with positive inspection outcome. De Fuentes *et al*. (2010) identified that

sanctioned auditors in Spain provide lower audit quality, measured as the likelihood of loss reporting and accruals levels, than non-sanctioned auditors. These results proved valid for samples of both Big 4 auditors and non-Big 4 auditors respectively, and also showed that audit quality significantly improves after the commencement of inspections.

Disciplinary sanctions in Sweden are issued as a result of independent oversight inspections, although a significant proportion of these investigations are initiated as a result of problems identified during self-regulated reviews (see section 2). Disciplinary sanctions issued by the SBPA either relate to the audit process or to professional conduct. For example, professional conduct refers to a lack of independence, unprofessional conduct, shortcomings in the audit firm's organisation or not cooperating with or resisting SBPA investigations. The cases included in our empirical analysis are either directly related to inappropriate auditor reporting (reporting failure) or deficiencies in the audit process that ultimately mean that generally accepted accounting principles will not be properly enforced (GAAP failure).

A potential drawback with disciplinary sanctions is that it is not possible to link performance to the characteristics of a specific client. However, we should note that such matching is not fully relevant, as sanctions are largely issued as a result of multiple deficiencies in several different assignments. The quality measure will basically distinguish between auditors who find it difficult to meet quality standards and those who do not. In order to minimise the risk of findings being influenced by large firms with greater resources being more active in fighting sanctions (see Feroz *et al*. 1991), we analyse cases in which a disciplinary sanction has been filed. However, we do not consider whether the sanction is subject to an appeal or the potential outcome of such an appeal. Also, decisions about disciplinary cases are taken by a group of qualified professionals with the relevant expertise, including judges in the Court of Appeal. Sanctions should not be issued without sufficient evidence of significant deficiencies in audit or professional conduct.

While not all audit failures or significant quality deficiencies are revealed in disciplinary cases, it is reasonable to expect that the likelihood of sanctions increases with lower service quality. This suggests that auditors with no disciplinary sanction activity could be viewed as a high quality supplier, and that auditors that have been subject to sanctions could be viewed as low quality suppliers (see Palmrose 1988, p.56).[14]

3.2 Audit quality differentiation between audit firms and audit offices

Using various proxies for audit quality, empirical research provides strong evidence in favour of Big 4 auditors performing higher quality audits than non-Big 4 auditors in the (US) public firm market (Kim *et al*. 2003; Choi *et al*. 2010). However, the European evidence on quality differentiation is based solely on earnings management proxies and the results are weaker than in US studies (Maijoor and Vanstraelen 2006; Van Tendeloo and Vanstraelen 2008). Studies of private firms in Belgium did not support quality differentiation between Big 4 and non-Big 4 auditors (Vander Bauwhede *et al*. 2003; Vander Bauwhede and Willekens 2004). It would seem as though the institutional setting (risk of litigation and level of tax-book alignment) influences whether any audit quality differentiation exists between large and small audit firms. Following Van Tendeloo and Vanstraelen (2008), high quality auditors in a high tax book alignment country like Sweden should be more motivated to maintain high quality and thereby avoid the need for tax authorities to file complaints and a damaged reputation.

The basic competence and independence arguments for quality differentiation between large and small audit firms as first presented by DeAngelo (1981) do not imply that it is necessarily just the current Big 4 auditors that are capable of performing higher quality than other smaller auditors.[15] Possibly the most important characteristic of the large audit firms are membership of international audit firm networks. Affiliates of those networks are subject to quality assurance and internal quality reviews and share common methodology and practice rules that generate economies of scale (Lenz and James 2007). Auditors that do not meet quality standards put the reputation of

the whole network at risk, thus creating strong incentives to maintain quality levels and avoid substandard performance being exposed in disciplinary cases. We find the Big 4 audit firms, BDO and Grant Thornton among the leading international audit networks. In belonging to a major international network, we expect that auditors at Grant Thornton and BDO, at least in the local private audit market in Sweden, are motivated and have sufficient resources to perform audits of the same quality as the Big 4 auditors. We therefore suggest one relevant audit quality distinction between 'Top 6 auditors' and other auditors, rather than (or in addition to) Big 4 auditors versus non-Big 4 auditors.

Next, we need to consider a potential office affect on audit quality. Recent evidence suggests that audit quality is not uniform within the same audit firm, i.e. there are national, regional and city-based differences. Given that large audit firms have invested heavily in preserving their image and reputation, they have an incentive to maintain a homogenous level of service quality (Choi *et al*. 2010). These large firms use standardised approaches to methodology, techniques and programmes worldwide in order to achieve this ambition. However, some dimensions of audit work make it difficult to uphold a homogenous quality at firm level. Despite having access to standardised audit approaches, complex auditing decisions are ultimately judgemental and taken by individuals or groups of individuals, and as such are likely to vary between firms and offices. We should here note that the local audit office has (typically) its own client base (Choi *et al*. 2010) and constitutes an independent profit centre. Studies of listed firms have documented that the size of the city-based office is an important determinant of audit quality (Reynolds and Francis 2000; Francis and Yu 2009; Choi *et al*. 2010). Francis and Yu (2009) investigated Big 4 offices in the US and, based on an auditor's propensity to issue a going concern report and earnings management benchmarks, found evidence of larger offices producing higher quality audits. Choi *et al*. (2010) studied a sample of both Big 4 audit clients (79 %) and non-Big 4 audit clients (21 %) and documented a positive association between audit offices size, quality (abnormal accruals) and price

(abnormal audit fees). However, they did not examine whether there were differences in quality measures between the sub-samples of large and small audit firms. Interestingly, issues related to the existence of quality differentiation between different non-Big 4 auditors have received little attention in the literature. Niemi (2004) is a notable exception here. He studied the hourly billing rate for a sample of 103 Finnish self-employed auditors and found that the rates were positively associated with experience and the size of the auditor's business.

The size of the audit firm implies different opportunities for auditors to take part in courses, seminars and other training activities outside their local office. However, such 'formal' opportunities to improve competence levels only reflect one aspect of audit quality. We suggest that something that is possibly even more important is auditors' daily exposure to internal input from colleagues and external expertise. Larger firms and offices have established systems for internal reviews of ongoing and completed audit work and accordingly arrange seminars so that experts can come and present new or updated standards, laws, guidelines, techniques and programmes on a regular basis, e.g. lunch meetings. Quality enhancing activities like these are either few and far between or non-existent in smaller firms or offices.

We argue that being continuously updated about the latest in the field and being challenged by colleagues improves an auditor's motivation and facilitates learning and quality improvements. Anecdotal evidence suggests that internal reviews are taken very seriously and that applied quality demands among the Big 4 firms exceed the minimum requirements imposed during SBPA inspections. In addition, valuable opportunities to informally ask one or several experienced colleagues should not be underestimated. Larger offices have a greater pool of capable audit personnel who can share their understandings of and knowledge about the business operations and internal control systems of clients (see Choi *et al*. 2010). The possibilities of having one's own work formally or informally reviewed by colleagues is likely to vary between audit firms and audit offices. One possible consequence of a lack of such possibilities is a higher proportion of sub-

standard audits. Based on the discussion above, our first hypothesis relates to the association between audit firm-size, audit office size and audit quality. Our hypotheses in alternative form are:

H1a: There is a negative association between audit firm size and the likelihood of a disciplinary sanction.

H1b: There is a negative association between audit office size and the likelihood of a disciplinary sanction.

3.3 Audit pricing and the size of audit firms and audit offices

In the professional services market, higher service quality is typically associated with a higher price (see Tirole 1990). After controlling for client characteristics affecting audit fees, such as size, complexity and auditor-client risk sharing, empirical studies relating to listed firms document that Big 4 earn a fee premium that is relative to other audit firms (Simunic 1980; Craswell *et al*. 1995; DeFond *et al*. 2000; Ferguson *et al*. 2003). The reported Big 4 premium is on average around 20 % (Francis 2004). Basically, higher price may be due to either the amount of audit effort invested (more audit hours) or greater expertise (higher price per hour). However, the extent to which private firms are willing to pay more for higher (expected) audit quality is largely unknown.

The use of high quality auditors (i.e. Big 4 auditor) is suggested to signal management's honesty and integrity to investors and creditors (Hay and Davis 2004). It has also been documented that, on average, private firms audited by a Big 4 auditor have lower cost of capital (Berry and Robertson 2006; Karjalainen 2011). As the findings indicate economic benefits from using high quality auditors, one would expect that (some) firms would be willing to pay extra for that higher quality.

Some factors could make it possible for larger offices to charge a lower price than smaller offices. For example, audit-related overhead costs allocated to individual clients could be lower,

given that larger offices typically have a larger clientele. However, Choi *et al*. (2010) documented a positive association between audit office size and price (abnormal audit fees) for sub-samples of Big 4 and non-Big 4 clients. They concluded that quality differentiation was priced as a fee premium in the audit market. Audit pricing studies also show that office levels in general have an impact on audit fees. Ferguson *et al*. (2003) and Francis *et al*. (2005) found that city specific, office-level industry leadership, when combined with national-level leadership, generated the highest fee premiums. To the extent that audit office size is positively associated with audit quality, we predict that the greater the size of the office the higher the audit quality will be, and that as a result the audit fee will also be higher. Our hypotheses in alternative form are:

H2a: There is a positive association between audit firm size and audit fees.

H2b: There is a positive association between audit office size and audit fees.

4. Sample and research design

4.1 Data

We used two samples to test our hypothesis. The first sample consisted of disciplinary sanctions against auditors. We collected data relating to all the disciplinary sanctions imposed by the SBPA from 2005 to 2009. The data included 274 disciplinary cases. After excluding 17 auditors involved in multiple disciplinary cases and 7 cases in which the auditor did not receive a disciplinary sanction, 250 observations remained for further analysis. Seventy three auditors received a reprimand, 137 a warning and 40 were excluded from the profession. Furthermore, information about the audit office size could not be calculated for 14 auditors, thus leaving 236 observations in the multinomial analyses. The characteristics of auditors with disciplinary sanctions were compared with a sample of 3,826 auditors without disciplinary sanctions.

[Insert Table 1 about here]

We made a manual inspection of files received from SBPA and classified the cases into eight different categories depending on the causes. This information is summarised in Table 1. The right-hand column of the table includes all the disciplinary cases, while the left-hand column only includes auditors involved in multiple cases once. As we use the likelihood of disciplinary sanctions as an indicator of audit quality, the coding of auditors involved in multiple disciplinary cases in the left-hand column is primarily based on whether the auditors were involved in cases related to the audit process or to the auditor's reporting. It can be seen from the table that 50 % of the cases are related to deficiencies in the audit process and about 25 % are related to the auditor's reporting. Independence related issues and insufficient documentation are other important reasons for disciplinary sanctions. The other identified reasons for sanctions were i) different types of problems or deficiencies within the audit firm (e.g. insufficient book-keeping or tax dodging), (ii) inappropriate actions related to disputes with the client over audit fees, (iii) insufficient quality in audit related services (typically related to different types of certificates mandated by law or other regulations) and (iv) a miscellaneous category.

Table 1 also shows that 42.16 % of the disciplinary cases were initiated by SBPA, 28.92 % by the taxation authorities, 10.44 % by clients and 18.47 % by others. Fifty-four of the 250 auditors were no longer practising auditors at the end of 2009. This figure includes 40 auditors who were stripped of their qualifications and 14 auditors who ended their auditing practice for other reasons.

We measured audit firm size with indicator variables based on the size of the audit firm and audit office size when testing both hypotheses. Information about audit firms and office affiliation for all auditors in Sweden was retrieved from files provided by SBPA. These files summarised the office affiliation of auditors at the end of 2009. However, in order to detect employees that had started to work for another audit firm we checked whether the affiliation of the auditors was the same in the disciplinary case files. Very few auditors had a different affiliation in 2009 than in the

disciplinary case files, indicating that employee switches are rare after the initiation of a disciplinary case.[16]

Table 2 displays office size by size-category of audit firms. It can be seen from the table that a much higher proportion of auditors at non-Top 6 audit firms work at offices with only one or two certified auditors, but that there are small differences in the office sizes of Big 4 audit firms and Grant Thornton and BDO. The mean and median numbers of certified auditors in each Big 4 audit firm office are 53 and 16 respectively. The corresponding means and medians are 23 and 9 for Grant Thornton and BDO offices. The average (median) number of authorised auditors in the offices of non-Top 6 audit firm is 3.8 (2.0).

[Insert Table 2 about here]

Our second data set consisted of audit fees and control variables for a sample of 952 small and medium sized companies. Regardless of size, all Swedish companies are required to report audit fees in the notes to their financial statements. The 952 firms included in our sample were randomly selected from the database Affärsdata, which contains financial statement data for most Swedish companies. The set criteria were that firms should be privately held limited companies and have one or more employees. The sampling procedure was conducted on August 17th 2010. As audit fees are not available in Affärsdata they were collected manually from financial statements. Financial statements can be downloaded from the Affärsdata database as pdf files. Data from 2009 was used in our main analyses. The mean (median) revenues of the companies were SEK 27.90 (4.18) million (1EUR=8.81 SEK).[17] Approximately 47 % of the companies were retailers, 24 % hotels or restaurants, 15 % came from the manufacturing sector and the remainder from construction or other services. The percentage of firms audited by Big 4 audit firms was 34.35 %, 10.19 % by Grant Thornton or BDO and the remaining 55.46 % by non-Top 6 audit firms.

4.2 Research design

Likelihood of disciplinary sanctions

Hypothesis 1 predicted that audit quality was associated with audit firm size and office size. The following multinomial logistic regressions were estimated to test whether firm and office sizes were associated with the likelihood of a disciplinary sanction:

(1) $\text{Ln}[P(\text{SANCTION}=m) / P(\text{SANCTION}=0)] = \beta_{0m} + \beta_{1m}*\text{LNOFFICESIZE} + \beta_{2m}*\text{GT/BDO} + \beta_{3m}*\text{NON TOP 6} + \beta_{4m}*\text{AUDAGE} + \varepsilon$

(2) $\text{Ln}[P(\text{SANCTION}=m) / P(\text{SANCTION}=0)] = \beta_{0m} + \beta_{1m}*\text{GT/BDO} + \beta_{2m}*\text{ NON TOP6-Large} + \beta_{3m}*\text{NON TOP 6-Small} + \beta_{4m}*\text{AUDAGE} + \varepsilon$

Where,

SANCTION:	m=0 for auditors with no disciplinary sanctions, m=1 for reprimands, m=2 for warnings and m=3 for exclusions from the profession. Auditors with no sanctions are in the base-category.
LNOFFICESIZE :	The natural logarithm of the number of CPAs at the audit office.
GT/BDO:	1 for companies audited by Grant Thornton or BDO and 0 otherwise.
NON TOP 6:	1 for auditors working at an audit firm other than PricewaterhouseCoopers, Ernst & Young, KPMG, Deloitte, Grant Thornton and BDO and 0 otherwise..
NON TOP 6-Large:	1 for non-Top 6 auditors working at offices with 3 or more auditors and 0 otherwise.
NON TOP 6-Small:	1 for non-Top 6 auditors working at offices with 1 or 2 auditors and 0 otherwise.
AUDAGE:	Age of the auditor-in-charge in years.

Two measures of sanctions were used. The first was based on disciplinary sanctions as a consequence of deficiencies in the audit process or auditors' reporting; a group that consisted of about 75 % of all disciplinary cases (see Table 1). The second was based on all the disciplinary sanctions during the time period studied. Auditors without a disciplinary sanction were placed in the base-category in the multinomial logistic regressions.

The calculation of LNOFFICESIZE was based on data retrieved from the Supervisory Board of Public Accountants (SBPA). This data included names of audit firms as well as the city or community name for all practising auditors. The calculation of office size was based on data for 2009. Fifty-four auditors in the sample are no longer practising. We used the size of the offices in which these auditors worked at the end of 2009 as the measure. If the person was no longer practising as an auditor, and the name of the audit firm was not included in our list of audit firms, we assumed that the auditors had been the only approved or authorised auditors in the firm.

The audit firm size was measured using indicator variables taking the value one for GT/BDO and NON TOP 6 auditors in regression 1. Auditors employed at any of the Big 4 audit firms PwC, Ernst&Young, KPMG or Deloitte were in the reference category. Grant Thornton and BDO are the fifth and sixth largest audit firms in Sweden. Of the 3,994 practising auditors in 2009, 229 worked for Grant Thornton and 155 for BDO. By way of comparison, in the same period PwC had 808 auditors, Ernst & Young 585 auditors, KPMG 440 auditors and Deloitte 156 auditors. However, even though Grant Thornton had more practising auditors than Deloitte, its revenue was lower (1356 million SEK compared with 886 million SEK in 2009/10). The seventh largest audit firm is SET with 97 auditors. The other audit firms are nationally very small, even though some firms locally have a relatively high market share.

It can be seen from Table 2 that most of the auditors at the Top 6 audit firms work at fairly large offices, whereas about the half of the auditors at the non-Top 6 audit firms work at offices

with only one or two authorised auditors. In regression 2 we exclude LNOFFICESIZE and replace NON TOP 6 with NON TOP 6-Large and NON TOP 6-Small. NON TOP 6-Large takes the value 1 if there are more than 2 authorised auditors at the office and NON TOP 6-Small takes the value 1 if there are only one or two authorised auditors at the office. The cut-off is based on the median value of auditors at the offices of non-Top 6 audit firms. Auditors at small offices of non-Top 6 firms also have limited possibilities to consult peers at the office nationally, which may have a negative impact on audit quality. AUDAGE was included in order to control for a reduced incentive of effort and participation in training activities by older employees (cf. Kubeck et al. 1996; Holmström 1999). In order to study office size for both large and small audit firms, we ran regression 1 separately on Top 6 audited firms and non-Top 6 audited firms. As the sample sizes were small when we split the sample, binary logistic regressions were used in which all types of sanctions were merged into one category.

Audit pricing

In order to test hypothesis two, relating to the effect of firm size and office size on audit fees, we used the following OLS regressions. The control variables in the regression were mainly based on Hope and Langli (2010), who studied fees for a sample of privately held Norwegian companies.

(3) $LNFEE = \beta_0 + \beta_1*LNOFFICESIZE + \beta_2*GT/BDO + \beta_3*NON\ TOP\ 6 + \beta_4*LNSALES + \beta_5*LNEMPLOY + \beta_6*SOLV + \beta_7*CHSOLV + \beta_8*INVREC + \beta_9*GROWTH + \beta_{10}*ROA + \beta_{11}*CURRATIO + \beta_{12}*FYE + \beta_{13}*GROUP + \beta_{14}*LOSS + \beta_{15}*LNCOMPAGE + \beta_{16}*AUDAGE + \beta_{17\text{-}20}*INDUSTRY + \beta_{21\text{-}30}*REGION + \varepsilon$

(4) $LNFEE = \beta_0 + \beta_1*GT/BDO + \beta_2*NON\ TOP\ 6\text{-}Large + \beta_3*NON\ TOP\ 6\text{-}Small + \beta_4*LNSALES + \beta_5*LNEMPLOY + \beta_6*SOLV + \beta_7*CHSOLV + \beta_8*INVREC + \beta_9*GROWTH + \beta_{10}*ROA + \beta_{11}*CURRATIO + \beta_{12}*FYE + \beta_{13}*GROUP + \beta_{14}*LOSS + \beta_{15}*LNCOMPAGE + \beta_{16}*AUDAGE + \beta_{17\text{-}20}*INDUSTRY + \beta_{21\text{-}30}*REGION + \varepsilon$

LNFEE:	Natural logarithm of audit fees.
LNOFFICESIZE:	Natural logarithm of the number of CPAs at the audit office.

GT/BDO:	1 for companies audited by Grant Thornton or BDO and 0 otherwise.
NON TOP 6:	1 for auditors working at an audit firm other than PricewaterhouseCoopers, Ernst & Young, KPMG, Deloitte, Grant Thornton and BDO and 0 otherwise.
NON TOP 6-Large:	1 for non-Top 6 auditors working at offices with 3 or more auditors and 0 otherwise.
NON TOP 6-Small:	1 for non-Top 6 auditors working at offices with 1 or 2 auditors and 0 otherwise.
LNSALES:	Natural logarithm of sales.
LNEMPLOY:	Natural logarithm of number of employees.
SOLV:	Shareholders' equity to total assets.
CHSOLV:	$SOLV_t$ less $SOLV_{t-1}$ (t is the year of the study).
INVREC:	Inventory and receivables divided by total assets.
GROWTH:	Natural logarithm of revenues year t less the natural logarithm of revenues year t-1.
ROA:	Return on assets.
CURRATIO:	Current assets to current liabilities.
FYE:	1 if the balance sheet date is the end of December and 0 otherwise.
GROUP:	1 if the company is a parent company or a subsidiary and 0 otherwise.
LOSS:	1 if earnings are less than zero and 0 otherwise.
LNCOMPAGE:	Natural logarithm of the age of the company in years.
AUDAGE:	Age of the auditor-in-charge.
$INDUSTRY_i$:	Indicator variables for 4 industries.
$REGION_i$:	Indicator variables for 20 regional provinces.

The measures of audit firm size and office size were our test variables. Following Hope and Langli (2010) we included two size-based variables: the log of sales (LNSALES) and the log of the number of employees (LNEMPLOY). To further control for differences in client-firm characteristics we included solvency (SOLV), changes in solvency (CHSOLV) and the ratio of inventories and receivables to total assets (INVREC). Prior studies suggest that as the inherent risk of companies with large inventories and receivables is higher, audit effort is also higher. Furthermore, following Hope and Langli (2010), as well as other studies, we included controls for return on assets (ROA), reporting of negative earnings (LOSS), the current ratio (CURRATIO) and an indicator variable taking the value one if the balance sheet date was 31st December (FYE). Most companies use 31st December as their balance sheet date, which suggests that auditors have a busy season at the beginning of a new year, which may in turn increase audit fees.

An indicator variable taking the value one if the company is the parent company or a subsidiary was included in order to control for the increased complexity of groups (GROUP). If a company belongs to a group the auditor either has to audit the group accounts or to communicate with the auditors of the parent company. We also included the age of the auditor (AUDAGE) in order to control for possible competence and experience effects on audit pricing. Finally, we controlled for possible industry effects and regional differences in audit pricing by including 4 industry indicators and 20 indicator variables for regional provinces. Region was deemed an important control variable due to the largest offices being in the Stockholm area and a couple of other large Swedish cities. Audit fees may also be higher in larger cities due to the higher costs of audit firms. We also explored the effects of region on our main results in supplementary analyses. Some of the variables in our audit fee data have extreme values. We winsorised SOLV, CHSOLV, GROWTH, ROA and CURRATIO with 1 % in the upper tail and 1 % in the lower tail.

5. Results

5.1 Likelihood of disciplinary sanctions

Univariate evidence on the association between our test variables and disciplinary sanctions is presented in Table 3. Table 4 includes multinomial logistic regressions and in Table 5 we present the results for binary regressions separately for auditors employed by Top 6 and non-Top 6 audit firms.

[Insert Table 3 about here]

In Table 3, Panel A displays the association between audit quality related sanctions and audit firm type, while Panel B displays the association for all kinds of sanctions. The results in both panels show that the proportion of auditors with a sanction varies significantly between audit firm types. In particular, auditors at small offices of non-Top 6 audit firms are much more likely to receive a disciplinary sanction than other auditors: 14.50 % of the auditors working with non-Top 6 audit firms at offices with 1 or 2 authorised auditors received a disciplinary sanction during the period 2005-2009 (see Table 3, Panel B). The corresponding percentage for auditors working with non-Top 6 audit firms at offices with more than 2 authorised auditors is 4.58 %. The percentages are 2.45 % for auditors at Big 4 audit firms and 3.14 % for auditors at Grant Thornton and BDO. It can also be seen from the table that of the 40 auditors deemed to lose their certification by SBPA, two auditors were employed by Big 4 audit firms, one by GT or BDO and the remaining 37 by non-Top 6 audit firms.

A further observation that can be made from the table is that auditors who have received a sanction are much older than auditors in general. The median age of the auditors without a sanction is 46 years.[18] The median ages of the auditors who received a reprimand, a warning and were excluded from the profession are 54 years, 55 years and 58 years respectively. Older auditors also work in smaller offices. The Spearman rank correlation between AUDAGE and LNOFFICESIZE is – 0.362 (prob-value < 0.001).

[Insert Table 4 about here]

Table 4 reports the multinomial logistic regression results. The group of auditors with no disciplinary actions is the base outcome in the regressions. Thus, a positive (negative) coefficient on a variable suggests that the likelihood of the corresponding type of disciplinary sanctions increases with higher (lower) values of the variable.

Four regressions are reported in Table 4. In regressions 1 and 2 only audit quality related sanctions are included. In these regressions auditors receiving a sanction for other reasons are excluded (e.g. independence, documentation or fee conflicts with clients). In regressions 3 and 4 all kinds of disciplinary sanctions are included. Regressions 1 and 3 include the test variables LNOFFICESIZE, GT/BDO and NON TOP 6 and regressions 2 and 4 include the test variables GR/BDO, NON TOP 6-Large and NON TOP 6-Small. Auditors at the Big 4 audit firms are in the reference category.

The results shown in the table indicate that non-Top 6 auditors are significantly more likely to receive warnings and be excluded from the profession than auditors at Top 6 audit firms. This result is similar when the coding of the dependent variable is based on audit quality related sanctions or all sanctions. The results in regressions 1 and 3 also show that exclusions from the profession are negatively and significantly associated with LNOFFICESIZE (p-value < 0.05). The coefficients of GT/BDO are negative in the panel with reprimands and positive in the panels with warnings and exclusions from the profession. The coefficients of GT/BDO are significant at the 0.05 level in regressions 1 and 2, but insignificant in regressions 3 and 4. Thus, the results indicate that auditors at GT/BDO are somewhat more likely to receive an audit quality related warning than auditors at Big 4 audit firms, but that there are no differences with respect to other types of disciplinary sanctions.

On average auditors at non-Top 6 firms work at much small offices than auditors at Top 6 audit firms (see Table 2). We used two approaches in an attempt to separate audit firm effects from audit office size. First, in order to study whether there were differences in the likelihoods of disciplinary sanctions between auditors at small and large offices of non-Top 6 audit firms, we replaced NON TOP 6 with NON TOP 6-Small and NON TOP 6-Large in regressions 2 and 4. The results in these regressions show that auditors at small non-Top 6 firms are more likely to receive a sanction than Big 4 audit firms. The mean (median) number of auditors at the NON TOP 6-Large offices is 7.02 (5.00). The corresponding mean and median are 1.25 and 1.00 at the NON TOP 6-Small offices.

Second, we estimated the likelihood of sanctions separately for the sub-samples of Top 6 and non-Top 6 auditors. In order to avoid estimating regressions with few observations per category, we used binary regressions in which the dependent variable took the value one if the auditor had received a reprimand, a warning or had been excluded from the profession and zero otherwise. The binary logit results are reported in Table 5. It can be seen that there is a significant negative association between audit office size and the likelihood of disciplinary sanctions for non-Top 6 auditors. However, the association is insignificant among auditors at Top 6 firms.[19] Thus, by using the likelihood of disciplinary sanctions as an indicator of audit quality, the results in the tables suggest that particularly among non-Top 6 auditors, auditors at small offices conduct audits of lower quality than auditors at larger offices. No significant differences in the likelihood of a disciplinary sanction between auditors at Big 4 firms and auditors at Grant Thornton or BDO could be identified.

Thus, the results show that large audit firms are less likely to receive a sanction, which supports hypothesis 1a. Hypothesis 1b predicted a positive association between audit office size and the likelihood of disciplinary sanctions. The results support the existence of such an association for non-Top 6 audit firms, which means that we received partial support for hypothesis 1b.

[Insert Table 5 about here]

A final noteworthy finding in Tables 4 and 5 is that the likelihood of disciplinary sanctions increases significantly with the age of the auditor. AUDAGE has positive coefficients that are significant at the 0.01 level in all the regressions. This result is contrary to prior studies, which show that experience improves audit quality. A possible reason for this is that older auditors have fewer incentives to conduct high quality audits or to participate in continuing education activities.[20]

5.2 Firm size, office size and audit fees

The results reported in the previous section suggest that, in particular, auditors at small non-Top 6 firms conduct audit work of a lower quality than other auditors. If a lower audit quality is an effect of lower audit effort, one would expect similar associations in regressions on audit fees. This section presents the results related to the second hypothesis of the study predicting positive associations between audit firm size, audit office size and audit fees.

Table 6 includes the OLS regression results. The data consists of 952 companies audited by 732 auditors. [21] Since the data includes multiple observations on some auditors, we report White standard errors that are robust to within auditor-cluster correlation (Rogers 1993). The correlations between the independent variables in the regressions are below 0.7 with the following exception: the correlation between LNSALES and LNEMPLOY is 0.84.[22]

Two regressions are reported in the table. Both models are highly significant and have R-squares around 55 %. This is somewhat lower than in audit fees' studies of publicly traded companies, but at the same level as prior studies of privately held companies. For example, Hope and Langli (2010), who studied audit fees for privately held Norwegian companies, report R-squares around 54 %.

[Insert Table 6 about here]

Regression 1 includes the test variables LNOFFICESIZE, GT/BDO and NON TOP 6. As above, Big 4 auditors are in the reference category. The results in the table show that LNOFFICESIZE has a positive coefficient that is significant at the 0.01 level. Furthermore, controlling for LNOFFICESIZE, it can be seen from the table that GT/BDO has a positive coefficient significant at the 0.10 level and that NON TOP 6 has a negative but insignificant coefficient.

In regression 2, LNOFFICESIZE is omitted and NON TOP 6 replaced by NON TOP 6-Small and NON TOP 6-Large. The coefficient of NON TOP 6-Large is negative and significant at the 0.10 level. The coefficient of NON TOP 6-Small is lower than the coefficient of NON TOP 6-Large, although not significantly (p-value in two-tailed test is 0.17). However, the coefficient is significantly different from zero at the 0.01 level, thus showing that audit fees are lower if a company is audited by a NON TOP 6-small audit firm compared to a Big 4 audit firm.

[Insert Table 7 about here]

Results in which we run the models separately on companies audited by Top 6 and non-Top 6 auditors are presented in Table 7. Here it can be seen that audit fees are positively associated with LNOFFICESIZE when companies are audited by Top 6 and non-Top 6 auditors. However, the coefficient is significant, at the 0.10 level, only for the sub-sample of non-Top 6 audited firms.[23]

Our data includes observations from different regions in Sweden. We include regional variables as controls for possible differences in price levels between different regions and these results indicate that fees are higher in the Stockholm area than in other regions. The largest offices are also located in Stockholm. In order to further explore whether office size effects is driven by regional price level differences, we estimated the regressions in Table 6 separately for the Stockholm area and for other areas in Sweden (not reported in tables). The sample includes 209 observations from the Stockholm area. LNOFFICESIZE has a positive coefficient significant at the 0.01 level as regression 1 is run on companies from the Stockholm area. The coefficients of

GT/BDO and NON TOP 6 are insignificant. In regression 2 LNOFFICESIZE is replaced by NON TOP 6-Small and NON TOP 6-Large. The coefficients of NON TOP 6-Small and NON TOP 6-Large are negative and significant at the 0.10, suggesting that the fees of BIG 4 auditors are higher than those of smaller and larger offices of non-Top 6 auditors. The coefficient of GT/BDO is also insignificant in this regression, indicating that there are no fee differences between Big 4 auditors and GT/BDO in the Stockholm area.

LNOFFICESIZE has a positive but insignificant coefficient, as the regressions were run on the 743 observations outside the Stockholm area (p-value = 0.16). Furthermore, GT/BDO had a positive coefficient significant at the 0.05 level, suggesting that fees are higher for Grant Thornton and BDO audited firms than for Big 4 audited firms outside the Stockholm area. The coefficient of NON TOP 6-Large was negative and insignificant and the coefficient of NON TOP 6-Small was negative and significant at the 0.05 level in regression 2. Thus, some of the significance levels were lower when the data was split, but the main findings hold when the Stockholm area and other areas were analysed separately. Indeed, one observation that can be made from these analyses is that the positive and marginally significant association between audit fees and GT/BDO in Table 6 is driven by observations outside the Stockholm area.

In sum, the empirical results in the section give partial support for hypothesis 2a and 2b. Hypothesis 2b predicted a positive association between audit office size and audit fees. We found a strong positive association for our entire sample, although the separate analysis of Top 6 and non-Top 6 auditors indicates that the association is stronger for non-Top 6 auditors. Related to hypothesis 2a and audit firm pricing, we find that auditors at especially small non-Top 6 firms charge lower fees than Top 6 auditors.

6. Conclusions

This study contributes to the literature on audit quality in private companies. Issues related to audit quality differentiation in the private component segment is of interest for the European Union (EU) as well as other markets with statutory audits. The statutory audit requirement provides different incentives for both auditors and companies compared to a voluntary audit setting. For example, in a recent study of U.K. companies Lennox and Pittman (2012) found that when audits were mandatory, companies with a small perceived demand for audits, that chose not be audited in a voluntary setting, selected low quality auditors. Our study contributes to the audit quality literature by studying the supply-side of the audit market. Unlike most of the previous research, which indirectly proxies for audit quality by using e.g. discretionary accruals (e.g. Francis and Yu 2009), we measure audit quality with disciplinary sanctions against auditors, since this is arguably a more direct measure of audit quality.

The first and most important contribution of this study is that it shows how audit quality varies with audit office size. We found that there was a significant positive association between audit office size and audit quality for non-Top 6 audit firms but not for Top 6 audit firms, which suggests that the larger collective competence and in-house expertise at the office is particularly important in small audit firms. The results imply that the quality delivered by small audit firms is more heterogeneous than that from large audit firms and that small offices with little external input, find it harder to meet the quality requirements. A possible reason for the insignificant association between audit office size and quality in Top 6 firms is that the lack of in-office expertise and competence can be compensated for by contacts with other offices. Overall, the findings indicate that the office level is an important unit of analysis of audit quality in private companies.

The second contribution of this study is that there are only small quality differences between Big 4 audit firms and BDO and Grant Thornton as the fifth and sixth largest audit firms in Sweden. The findings suggest that in private firm market, these auditors are capable of performing at similar audit quality level as Big 4 auditors. As members of large international networks, auditors at BDO

and Grant Thornton, are motivated to maintain their quality levels, because if they did not they would jeopardise the reputation of the entire network. However, our results show that the likelihood of a disciplinary sanction against the auditor is significantly higher if he or she is employed by a non-Top 6 audit firm than by a Top 6 audit firm. The audit firm size hypothesis of DeAngelo (1981) has frequently been used as the rationale for the Big 4/non-Big 4 dichotomy in the literature (e.g. Karjalainen 2011). Our results thus underline the need to go beyond the Big 4 versus non-Big 4 dichotomy when audit firm size hypotheses are tested. Future research into private firms may confirm whether findings relating to the association between categories of audit firms and audit quality are generalisable to other jurisdictions.

Our third contribution relates to whether audit quality is priced at the market for private companies. Generally, our results suggest that larger audit firms charge higher fees. The results show that auditors at non-Top 6 auditors at small offices charge the lowest fees. Findings suggest that companies are also willing to pay for high quality services for private firm audits. The separate analyses of Top 6 and non-Top 6 audit firms also show that the positive association between office size and fees is moderately significant for the sub-sample of non-Top 6 auditors. Thus, the results of the study show that the associations between fees and our test variables are largely similar, as are the associations between our quality measure and the test variables, thus suggesting that quality and price are associated.

Overall, this study contributes to our understanding of audit quality differentiation in a market with statutory audits. The findings suggest that some auditors at small audit firms and audit offices trade-off price for quality in order to meet the demand for low quality audits; something that is reflected in relatively high proportions of audit failures, i.e. disciplinary sanctions, and low audit fees. The degree to which quality differentiation is mainly driven by differences in incentives or capabilities of auditors could be addressed in future research.

References

Affärsvärlden. 2011. *Konsultguiden 2011*.

Becker, C.L., DeFond, M.L., Jiambalvo, J., and Subramanyam, K.R., 1998. The effect of audit quality on earnings management. *Contemporary accounting research*, 15 (1), 1-24.

Berry, A. and Robertson, J., 2006. Overseas bankers in the UK and their use of information for making lending decisions: Changes form 1985. *British accounting review*, 38 (2), 175-191.

Bursell, J., 2010. Revisorernas löner höjs trots varning. *Svenska dagbladet*, October 27, 2010.

Carcello, J.V.C., Hollingsworth, C., and Mastrolia, S., 2011. The effect of PCAOB inspections on Big 4 audit quality. *Research in accounting regulation*, 23 (2), 85-96.

Casterella, J.R., Jensen, K.L., and Knechel, W.R., 2009. Is self-regulated peer review effective at signaling audit quality? *Accounting review*, 84 (3), 713-735.

Choi, J.-H, Kim, C., Kim, J.-B., and Zhang, Y., 2010. Audit Office Size, Audit Quality, and Audit Pricing. *Auditing: a journal of practice and theory*, 29 (1), 73-98.

Craswell, A.T., Francis, J.R., and Taylor, S.L., 1995. Auditor brand name reputations and industry specializations. *Journal of accounting and economics*, 20 (3), 297-322.

DeAngelo, L.E., 1981. Auditor Size and Audit Quality. *Journal of accounting and economics*, 3 (3), 183-199.

DeFond, M., Francis, J., and Wong, T.J., 2000. Auditor industry specialization and market segmentation: evidence from Hong Kong. *Auditing: a journal of theory and practice*, 19 (1), 49-66.

De Fuentes, C., Illueca, M. and Cousuelo Pucheta-Martinez, M., 2010. *Disciplinary sanctions and audit quality: Empirical evidence from an external oversight system*. Working paper, Universitat de Valencia.

EU, 2006. Council Directive 2006/43/EC of 9 June 2006 on statutory audits of annual accounts and consolidated accounts.

Ferguson, A., Francis., J., and Stokes, D., 2003. The effects of firm-wide and office-level industry expertise on audit pricing. *Accounting review*, 78 (2), 429-448.

Feroz, E., Park, K., and Pastena, V., 1991. The financial and market effects of the SECs accounting and auditing enforcement releases. *Journal of accounting research*, 29 (3), 107-142.

Francis, J.R., 2004. What do we know about audit quality? *British accounting review*, 36 (4), 345-368.

Francis, J., Reichelt, K., and Wang, D., 2005. The pricing of national and city-specific reputations for industry expertise in the US audit market. *Accounting review*, 80 (1), 113-136.

Francis, J.R., and M.D. Yu., 2009. Big 4 office size and audit quality. *Accounting review*, 84 (5), 1521-1552.

Hay, D., and Davis, D., 2004. The Voluntary Choice of an Auditor of Any Level of Quality, *Auditing: a journal of practice and theory*, 23 (2), 37-53.

Hilary, G., and Lennox, C., 2005. The credibility of self-regulation? Evidence from the accounting profession's peer review program? *Journal of accounting and economics*, 40 (1-3), 211-229.

Holmström, B., 1999. Managerial incentive problems: a dynamic perspective. *Review of economic studies*, 66 (1), 169-182.

Hope, O.K., and Langli, J.C., 2010. Auditor independence in a private firm and low litigation setting. *Accounting review*, 85 (2), 573-605.

Karjalainen, J., 2011. Audit quality and cost of debt capital for private firms: Evidence from Finland. *International journal of auditing*, 15 (1), 88-108.

Kim, J.-B., Chung, R. and Firth, M., 2003. Auditor conservatism, asymmetric monitoring and earnings management. *Contemporary accounting research*, 20 (2), 323-359.

Kubeck, J. E., N.D. Delp, T.K. Haslett, and M.A. McDaniel., 1996. Does Job-Related Training Performance Decline With Age? *Psychology and aging*, 11 (1), 92-107.

Lennox, C., and Pittman, J., 2010. Auditing the Auditors? Evidence on the recent reforms to the external monitoring of audit firms. *Journal of accounting and economics*, 49 (1-2), 84-103.

Lennox, C., and Pittman, J., 2011. Voluntary audits versus mandatory audits. *Accounting review*, 86 (5), 1655-1678.

Lenz, H., and James, M., 2007. International Audit Firms as Strategic Networks: The Evolution of Global Professional Service Firms, in: Cliquet, G., Hendriksen, G., Tuunanen, M., and Windspreger, J. (ed.), *Economics and Management of Networks: Franchising, Strategic Alliances, Cooperatives*, Physica-verlag, New York.

Maijoor, J., and Vanstraelen, A., 2006. Earnings management within Europe: the effects of member state audit environment, audit firm quality and international capital markets. *Accounting and business research*, 36 (1), 33-52.

Niemi, L., 2004. Auditor size and audit pricing: evidence from small audit firms. *European accounting review*, 13 (3), 541-560.

Palmrose, Z., 1988. An analysis of auditor litigation and audit service quality. *Accounting review*, 63 (1), 55-73.

Reynolds, J.K. and Francis, J.R., 2000. Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of accounting and economics*, 30 (3), 375-400.

Rogers, W., 1993. Regression Standard Errors in Clustered Samples. *Stata technical bulletin*, 13 (May), 19–23.

Simunic, D., 1980. The pricing of audit services: Theory and evidence. *Journal of accounting research*, 18 (1), 161-190.

SOU, 2008:32. *Avskaffande av revisionsplikten för små företag*. *Delbetänkande av utredningen om revisorer och revision*. Statens Offentliga Utredning, Stockholm: Fritzes.

Swedish Government, 2010. Proposition 2009/10:204. *En frivillig revision*. Department of Justice, 20 April 2010.

Tirole, J. 1990. *The theory of industrial organization*, MIT Press, Cambridge, MA.

Vander Bauwhede, H., Willekens, M., and Gaeremynck, A., 2003. Audit firm size, public ownership, and firms' discretionary accruals management. *International journal of accounting*, 38 (1), 1-22.

Vander Bauwhede, H., and M. Willekens., 2004. Evidence on (the lack of) audit-quality differentiation in the private client segment of the Belgian audit market. *European accounting review*, 13 (3), 501-522.

Van de Poel, K., van Opijnen, M., Maijoor, S. and Vanstraelen, A., 2009. *Public Oversight and Audit Quality: Evidence from Public Oversight of Audit Firms in the Netherlands*. Working paper, University of Antwerp.

Van Tendeloo, B., and Vanstraelen, A., 2008. Earnings management and audit quality in Europe: Evidence from the private client segment market. *European accounting review*, 17 (3), 447-469.

TABLE 1
Reasons for, and initiators of, disciplinary cases

Reasons for disciplinary cases				
Audit process	125	50.00 %	130	48.69 %
Auditor's reporting	64	25.60 %	68	25.47 %
Documentation	9	3.60 %	9	3.37 %
Independence	20	8.00 %	22	8.24 %
Deficiencies within the audit firm	10	4.00 %	13	4.87 %
Conflict with client	4	1.60 %	4	1.50 %
Quality of NAS	8	3.20 %	8	3.00 %
Other	10	4.00 %	13	4.87 %
Total	250	100.00 %	267	100.00 %

Initiators of disciplinary cases				
Supervisory board - cases opened after quality controls	71	28.51 %	71	26.69 %
Supervisory board - other	34	13.65 %	35	13.16 %
Taxation authorities	72	28.92 %	80	30.08 %
Clients	26	10.44 %	28	10.53 %
Other	46	18.47 %	52	19.55 %
Total	249	100.00 %	266	100.00 %

Notes:
Some auditors have been involved in multiple disciplinary cases and these are sometimes related. In the right-hand column these cases are considered as two separate cases. In the left hand column an auditor is included only once in the figures. If an auditor has been involved in several disciplinary cases, the classification is first of all based on the more severe case (e.g. the warning if an auditor has received both a warning and a reminder). A goal with the study is to investigate how audit quality is related to the background characteristics of auditors. The audit quality related sanctions are classified according to whether an auditor has been involved in a case related to the audit process or reporting. For example, if an auditor has been involved in an audit process case and an independence case, it is classified as an audit process case in the left-hand column. The identity of the initiator was not available in the files examined for one disciplinary case.

TABLE 2
Auditors by firm size and office size

No. of auditors at the office	Big 4	GT/BDO	Non-Top 6	Total
1- 2 auditors	6.48 %	9.16 %	56.89 %	28.09 %
3 - 7 auditors	17.76 %	21.20 %	31.09 %	23.73 %
8 - 23 auditors	32.87 %	34.82 %	10.46 %	23.56 %
> 23 auditors	42.88 %	34.82 %	1.57 %	24.62 %
	100 %	100 %	100 %	100 %

TABLE 3
Association between audit firm size, office size, age and disciplinary sanctions

PANEL A - AUDIT QUALITY RELATED SANCTIONS

	No sanction		Reprimand		Warning		Exclusion		Total	
BIG 4	1911	98.30 %	17	0.87 %	15	0.77 %	1	0.05 %	1944	100.00 %
GT /BDO	370	96.86 %	3	0.79 %	8	2.09 %	1	0.26 %	382	100.00 %
NON TOP 6-Large	708	96.33 %	8	1.09 %	17	2.31 %	2	0.27 %	735	100.00 %
NON TOP 6-Small	837	88.67 %	17	1.80 %	61	6.46 %	29	3.07 %	944	100.00 %
ALL	3826	95.53 %	45	1.12 %	101	2.52 %	33	0.82 %	4005	100.00 %

Pearson chi2(9) = 169.96 Pr < 0.001

	No sanction	Reprimand	Warning	Exclusion	P-value
LNOFFICESIZE					
Mean	2.16	1.46	1.12	0.30	<0.001[a]
Median	1.95	1.10	0.69	0.00	<0.001[b]
StdDev	1.63	1.62	1.48	0.96	
Min	0.00	0.00	0.00	0.00	
Max	5.38	5.38	5.38	4.85	
N	3826	45	101	33	
AUDAGE					
Mean	46.45	52.57	55.54	59.42	<0.001[a]
Median	46.00	53.50	56.00	58.00	<0.001[b]
StdDev	10.87	7.64	7.90	9.47	
Min	23.00	38.00	35.00	41.00	
Max	83.00	69.00	74.00	80.00	
N	3826	46	111	33	

(Table continues)

PANEL B - ALL SANCTIONS

	No sanction		Reprimand		Warning		Exclusion		Total	
BIG 4	1911	97.55 %	27	1.38 %	19	0.97 %	2	0.10 %	1959	100.00 %
GT /BDO	370	96.86 %	3	0.79 %	8	2.09 %	1	0.26 %	382	100.00 %
NON TOP 6 -Large	708	95.42 %	12	1.62 %	20	2.70 %	2	0.27 %	742	100.00 %
NON TOP 6-Small	837	85.50 %	28	2.86 %	79	8.07 %	35	3.58 %	979	100.00 %
ALL	3826	94.19 %	70	1.72 %	126	3.10 %	40	0.98 %	4062	100.00 %

Pearson chi2(9) = 217.63 Pr < 0.001

	No sanction	Reprimand	Warning	Exclusion	P-value
LNOFFICESIZE					
Mean	2.16	1.60	0.99	0.35	<0.001[a]
Median	1.95	1.10	0.00	0.00	<0.001[b]
StdDev	1.63	1.85	1.39	1.08	
Min	0.00	0.00	0.00	0.00	
Max	5.38	5.38	5.38	4.85	
N	3826	70	126	40	
AUDAGE					
Mean	46.45	52.50	55.45	59.05	<0.001[a]
Median	46.00	54.00	56.00	58.00	<0.001[b]
StdDev	10.87	7.92	7.86	10.29	
Min	23.00	37.00	35.00	35.00	
Max	83.00	69.00	74.00	80.00	
N	3826	72	138	40	

Notes:
[a] P-value for test of equality of averages (ANOVA). [b] P-values for Kruskal-Wallis test of equality of populations. Sample with no sanctions consists of all practising auditors at the end of 2009. Samples with reprimands, warnings and exclusions consist of auditors found guilty by SBPA in disciplinary cases 2005 – 2009. Fifty-four of these auditors were no longer practising at the end of 2009.

TABLE 4
Likelihood of disciplinary sanctions against auditors

Regressions 1 and 3: $\text{Ln}[P(\text{SANCTION}=m) / P(\text{SANCTION}=0)] = \beta_{0m} + \beta_{1m}$*LNOFFICESIZE + β_{2m}*GT/BDO + β_{3m}*NON TOP6 + β_{4m}*AUDAGE+ ε

Regressions 2 and 4: $\text{Ln}[P(\text{SANCTION}=m) / P(\text{SANCTION}=0)] = \beta_{0m} + \beta_{1m}$*GT/BDO + β_{2m}* NON TOP6-Large + β_{3m} *NON TOP6-Small + β_{4m}*AUDAGE+ ε

The dependent variable SANCTION takes different values depending on the type of sanction. Auditors without a sanction are in the base-category.

	AUDIT QUALITY RELATED SANCTIONS				ALL SANCTIONS			
	Reg 1		**Reg 2**		**Reg 3**		**Reg 4**	
	Coeff.	**Z-value**	**Coeff.**	**Z-value**	**Coeff.**	**Z-value**	**Coeff.**	**Z-value**
REPRIMANDS								
LNOFFIZESIZE_1	-0.20	1.26	-	-	-0.07	-0.55	-	-
GT/BDO	-0.23	0.37	-0.16	0.25	-0.65	-1.08	-0.62	1.01
NON TOP 6	-0.09	0.22	-	-	0.17	0.50	-	-
NON TOP 6-Large	-	-	0.11	0.24	-	-	0.05	0.15
NON TOP 6-Small	-	-	0.43	1.01	-	-	0.48	1.47
AUDAGE	0.04	3.05***	0.05	3.22***	0.05	3.92***	0.04	3.89***
CONSTANT	-6.15	7.22***	-6.83	10.80***	-6.14	8.34***	-6.28	12.19***
WARNINGS								
LNOFFIZESIZE	-0.07	0.64	-	-	-0.21	1.89*	-	-
GT/BDO	0.90	2.03**	0.93	2.10**	0.63	1.46	0.70	1.64
NON TOP 6	1.31	3.97***	-	-	1.08	3.66***	-	-
NON TOP 6 -Large	-	-	0.95	2.58***	-	-	0.88	2.67***
NON TOP 6 -Small	-	-	1.73	5.41***	-	-	1.78	6.32***
AUDAGE	0.06	6.54***	0.06	6.06***	0.06	6.61***	0.05	6.37***
CONSTANT	-7.63	12.55***	-7.59	15.80***	-6.77	11.86***	-7.17	16.48***
EXCLUSIONS								
LNOFFIZESIZE	-0.95	2.25**	-	-	-0.83	2.39**	-	-
GT/BDO	1.45	1.01	1.54	1.09	0.75	0.60	0.85	0.69
NON TOP 6	1.59	2.33**	-	-	1.21	3.02***	-	-
NON TOP 6-Large	-	-	1.42	1.16	-	-	0.74	0.74
NON TOP 6-Small	-	-	3.46	3.48***	-	-	2.98	4.33***
AUDAGE	0.09	4.22***	0.09	4.24***	0.09	4.37***	0.09	4.19***
CONSTANT	-9.92	7.27***	-11.94	7.08***	-9.29	7.61***	-11.06	7.35***
Model significance								
WALD CHI-SQUARE	173.16***		190.13***		195.76***		227.43***	
N	4005		4005		4062		4062	

Notes:

*, **, *** denote p-value < 10 percent, < 5 percent, and < 1 percent, respectively, with two-tailed tests. Multivariate logistic regression results are reported and the dependent variable takes the value one if the auditor has received a reprimand, two for warnings, three for exclusions from the profession by SBPA and zero for no disciplinary sanctions. All t-statistics in parentheses are calculated using White's (1980) method to correct for heteroskedasticity.

TABLE 5
Audit office size and the likelihood of a disciplinary action for Top 6 and non-Top 6 auditors

Regressions 1 and 3**:** $LnP[(SANCTION=1) / P(SANCTION=0)] = \beta_0 + \beta_1*LNOFFICESIZE + \beta_2*AUDAGE+ \varepsilon$
Regressions 2 and 4: $LnP[(SANCTION=1) /P (SANCTION=0)] = \beta_0 + \beta_1*LNOFFICESIZE + \beta_2*GT/BDO + \beta_3*AUDAGE + \varepsilon$
The dependent variable SANCTION takes the value one if the auditor has received a disciplinary sanction (reprimand, warning or exclusion from the profession) by SBPA and zero otherwise.

	AUDIT QUALITY RELATED SANCTIONS				**ALL SANCTIONS**			
	Non-Top 6		**Top 6**		**Non-Top 6**		**Top 6**	
	Coeff	**Z-value**	**Coeff**	**Z-value**	**Coeff**	**Z-value**	**Coeff**	**Z-value**
LNOFFIZESIZE	-0.53	3.51***	0.04	0.36	-0.65	4.59***	0.09	0.83
GT/BDO	-	-	0.54	1.53	-	-	0.19	0.56
AUDAGE	0.04	4.49***	0.10	7.87***	0.04	4.61***	0.09	7.70***
CONST	-4.37	7.79***	-9.09	12.38***	-3.84	7.72***	-8.22	11.64***
Model significance:								
WALD CHI-SQUARE	47.14***		75.24***		61.14***		61.71***	
N	1679		2326		1721		2341	

Notes:
*, **, *** denote p-value < 10 percent, < 5 percent, and < 1 percent, respectively, with two-tailed tests. All t-statistics in parentheses are calculated using White's (1980) method to correct for heteroskedasticity.

TABLE 6
Results of OLS regressions of audit fees on audit firm size and office size

Regression 1: $LNFEE = \beta_0 + \beta_1*LNOFFICESIZE + \beta_2*GT/BDO + \beta_3*NON\ TOP\ 6 + \beta_4*LNSALES + \beta_5*LNEMPLOY + \beta_6*SOLV + \beta_7*CHSOLV + \beta_8*INVREC + \beta_9*GROWTH + \beta_{10}*ROA + \beta_{11}*CURRATIO + \beta_{12}*FYE + \beta_{13}*GROUP + \beta_{14}*LOSS + \beta_{15}*LNCOMPAGE + \beta_{16}*AUDAGE + \beta_{17\text{-}20}*INDUSTRY + \beta_{21\text{-}30}*REGION + \varepsilon$

Regression 2: $LNFEE = \beta_0 + \beta_1*GT/BDO + \beta_2*NON\ TOP\ 6\text{-}Large + \beta_3*NON\ TOP\ 6\text{-}Small + \beta_4*LNSALES + \beta_5*LNEMPLOY + \beta_6*SOLV + \beta_7*CHSOLV + \beta_8*INVREC + \beta_9*GROWTH + \beta_{10}*ROA + \beta_{11}*CURRATIO + \beta_{12}*FYE + \beta_{13}*GROUP + \beta_{14}*LOSS + \beta_{15}*LNCOMPAGE + \beta_{16}*AUDAGE + \beta_{17\text{-}20}*INDUSTRY + \beta_{21\text{-}30}*REGION + \varepsilon$

	Reg. 1		**Reg. 2**	
	Coeff.	**T-value**	**Coeff.**	**T-value**
LNOFFICESIZE	0.06	2.62***	-	-
GT/BDO	0.11	1.77*	0.11	1.71*
NON TOP 6	-0.05	-0.92	-	-
NON TOP 6 - Large	-	-	-0.09	1.75*
NON TOP 6 - Small	-	-	-0.16	3.36***
LNSALES	0.15	3.45***	0.15	3.49***
LNEMPLOY	0.21	3.48***	0.22	3.74***
SOLV	-0.06	1.03	-0.05	0.94
CHSOLV	0.002	1.71*	0.002	1.78*
INVREC	-0.08	0.95	-0.10	1.16
GROWTH	0.004	0.08	0.004	0.09
ROA	-0.25	2.24**	-0.25	2.18**
CURRATIO	0.04	1.04	0.04	1.04
FYE	-0.03	0.86	-0.03	0.74
GROUP	0.19	3.84***	0.19	3.95***
LOSS	0.01	0.21	0.02	0.31
LNCOMPAGE	0.01	0.63	0.01	0.50
AUDAGE	0.001	0.57	0.001	0.61
$INDUSTRY_i$	NR		NR	
$REGION_i$	NR		NR	
CONST	1.40	4.15***	1.57	5.08***
F-value	21.88***		20.96***	
R-squared	0.55		0.55	
N	952		952	

Notes:
*, **, *** denote p-value < 10 percent, < 5 percent, and < 1 percent, respectively, with two-tailed tests. All t-statistics in parentheses are calculated using clustering on auditor-in-charge to adjust for serial correlation and White's (1980) method to correct for heteroskedasticity.

TABLE 7
Regressions of audit fees on audit firm size and office size separately for Top 6 and non-Top 6

Regression 1 and 3: $LNFEE = \beta_0 + \beta_1*LNOFFICESIZE + \beta_2*LNSALES + \beta_3*LNEMPLOY + \beta_4*SOLV + \beta_5*CHSOLV + \beta_6*INVREC + \beta_7*GROWTH + \beta_8*ROA + \beta_9*CURRATIO + \beta_{10}*FYE + \beta_{11}*GROUP + \beta_{12}*LOSS + \beta_{13}*LNCOMPAGE + \beta_{14}*AUDAGE + \beta_{15\text{-}18}*INDUSTRY + \beta_{19\text{-}28}*REGION + \varepsilon$

Regression 2: $LNFEE = \beta_0 + \beta_1*NON\ TOP\ 6\text{-}Small + \beta_2*LNSALES + \beta_3*LNEMPLOY + \beta_4*SOLV + \beta_5*CHSOLV + \beta_6*INVREC + \beta_7*GROWTH + \beta_8*ROA + \beta_9*CURRATIO + \beta_{10}*FYE + \beta_{11}*GROUP + \beta_{12}*LOSS + \beta_{13}*LNCOMPAGE + \beta_{14}*AUDAGE + \beta_{15\text{-}18}*INDUSTRY + \beta_{19\text{-}28}*REGION + \varepsilon$

Regression 4: $LNFEE = \beta_0 + \beta_1*GT/BDO + \beta_2*LNSALES + \beta_3*LNEMPLOY + \beta_4*SOLV + \beta_5*CHSOLV + \beta_6*INVREC + \beta_7*GROWTH + \beta_8*ROA + \beta_9*CURRATIO + \beta_{10}*FYE + \beta_{11}*GROUP + \beta_{12}*LOSS + \beta_{13}*LNCOMPAGE + \beta_{14}*AUDAGE + \beta_{15\text{-}18}*INDUSTRY + \beta_{19\text{-}28}*REGION + \varepsilon$

	NON TOP 6 AUDITORS				**TOP 6 AUDITORS**			
	Reg. 1		**Reg. 2**		**Reg. 3**		**Reg. 4**	
	Coeff.	**T-value**	**Coeff.**	**T-value**	**Coeff.**	**T-value**	**Coeff.**	**T-value**
LNOFFICESIZE	0.06	1.82*	-	-	0.05	1.59	-	-
GT/BDO	-	-	-	-	-	-	0.11	1.58
NON TOP 6 - Small	-	-	-0.07	1.36	-	-	-	-
LNSALES	0.15	4.49***	0.15	4.52***	0.14	1.53	0.14	1.54
LNEMPLOY	0.21	4.30***	0.21	4.28***	0.22	1.75*	0.24	1.98**
SOLV	-0.06	0.78	-0.06	0.79	-0.01	0.07	0.002	0.02
CHSOLV	0.001	0.54	0.00	0.60	0.004	1.98**	0.004	1.95*
INVREC	-0.01	0.16	-0.02	0.23	-0.20	1.15	-0.23	1.31
GROWTH	0.01	0.23	0.01	0.23	-0.02	0.21	-0.02	0.20
ROA	-0.12	0.86	-0.13	0.92	-0.44	2.39**	-0.41	2.20**
CURRATIO	0.09	2.06**	0.09	2.03**	-0.07	1.14	-0.07	1.16
FYE	-0.01	0.14	-0.01	0.11	-0.03	0.46	-0.03	0.46
GROUP	0.19	3.21***	0.19	3.26***	0.17	2.06**	0.18	2.14**
LOSS	0.08	1.47	0.08	1.50	-0.09	1.09	-0.08	0.95
LNCOMPAGE	-0.01	0.57	-0.02	0.66	0.06	1.93*	0.06	1.77*
AUDAGE	0.0001	0.30	0.00	0.46	-0.002	0.74	-0.002	0.53
$INDUSTRY_i$	NR		NR		NR		NR	
$REGION_i$	NR		NR		NR		NR	
CONST	1.20	4.25***	1.31	4.66***	1.66	2.35**	1.82	2.84***
F-value	13.66***		13.23***		15.87***		15.41***	
R-squared	0.49		0.49		0.61		0.61	
N	528		528		424		424	

Notes:
*, **, *** denote p-value < 10 percent, < 5 percent, and < 1 percent, respectively, with two-tailed tests. All t-statistics in parentheses are calculated using clustering on auditor-in-charge to adjust for serial correlation and White's (1980) method to correct for heteroskedasticity.

Notes

[1] Disciplinary action may of course also be taken against auditors of publicly held companies. However, the vast majority of all disciplinary cases are related to audits of privately held companies.

[2] The average number of audit assignments held by auditors-in-charge in Sweden was 123 in 2009 (excluding assignments as deputy).

[3] Small firms that are given dispensation from the audit requirement are private limited companies and limited liability companies that for two consecutive years have not exceeded two of the following criteria (2006/43/EC): a balance sheet total of 4.4 million euro, a net turnover of 8.8 million euro and an average of 50 full-time employees. The directive should have been implemented by member states no later than September 2008.

[4] The governmental decision means not exceeding two of the following three size criteria from the audit requirement: a net turnover of 3 million SEK (1 EUR = 8.81 SEK, February 21, 2012), a balance sheet total of 1.5 million SEK and an average number of full-time employees of 3. If auditing is no longer required, the general meeting should actively take a decision not to have an audit.

[5] Auditing is also required in 21,200 trading partnerships, 15,000 foundations, 1,530 foreign branches, 270 insurance companies, 75 banks, 70 economic associations, 15 non-profit organisations, 5 sole proprietorships and 4 European companies (SOU 2008:32, p.124).

[6] In 2006, the two institutes for public accountants in Sweden, Föreningen Auktoriserade Revisorer, FAR, and Svenska Revsiorsamfundet, SRS, merged. From September 2006 until March 2010 they used the name FARSRS. Since March 2010 this Institute has been called FAR.

[7] In addition to these types of auditor, there are auditors who have gained approval without taking an examination. Such auditors are allowed to audit small firms over a transitional period.

[8] Reported revenues in Sweden for Öhrlings PwC, Ernst & Young, KPMG and Deloitte were 10.383 billion SEK. 1 Euro = 8.81 SEK, as of February 21, 2012.

[9] Reported turnover for the largest ten audit firms in 2009 (in Euros): 1) PricewaterhouseCoopers 471 million, 2) Ernst & Young 296 million, 3) KPMG 218 million, 4) Deloitte 148 million, 5) Grant Thornton 97 million, 6) BDO 60 million, 7) SET Revisionsbyrå 34 million, 8) Baker Tilly 18 million, 9) Nexia 6 million and 10) Rödl & Partners 6 million.

[10] Among the Top 6 audit firms, PwC have a total of 130 audit offices, KPMG 61, Ernst & Young 61, Deloitte 30, Grant Thornton 24, and BDO 19.

[11] The quality controls made by FAR should meet all the requirements stated by the EU.

[12] In the period 2005-2009 a total of 674 disciplinary cases were opened: 177 (26.3%) were initiated as a result of inspections by SBPA or FAR, 145 (21.5 %) as a result of tips from tax authorities, 169 (25.1 %) based on tips from clients and 183 (27.2 %) based on tips from others.

[13] The SBPA opened a total of 674 disciplinary investigations from 2005 to 2009 (SBPA Annual Report, various issues). 295 or 44 % of these cases led to the issuing of disciplinary sanctions. 13 auditors received multiple sanctions. From 2005–2009 the average number of qualified auditors was 4,083.

[14] Note that Palmrose (1988) investigated litigation cases against auditors, not disciplinary sanctions.

[15] During the 1970s and 1980s there were eight big audit firm networks (‘Big 8’). Two big mergers in 1989 reduced the group to ‘Big 6’. This became ‘Big 5’ when Coopers & Lybrand and Price Waterhouse merged in 1998. Since the disappearance of Andersen in 2002 the current large audit firms have been referred to as ‘Big 4’.

[16] The following switches of employees were identified. One auditor who had worked for a Big 4 audit firm had switched to a small firm and one auditor who had worked for a small audit firm had switched to a Big 4 firm. Two auditors who had worked for Grant Thornton or BDO switched to small audit firms. Finally, there were a few switches

between small audit firms. The few switches indicate that the data at the end of 2009 was also representative of the situation prior to 2009.

[17] Exchange rate at 21st February 2012.

[18] This is the age of the auditors without a sanction in 2007; the mean and the median year of the sanctions in the sample are 2007.

[19] We also ran the regressions in Table 4 separately for Big 4 auditors and for auditors employed by Grant Thornton and BDO. The office size measures were insignificant in all these regressions.

[20] Indeed, a possible alternative explanation is that on average older auditors have more audit assignments, thus implying that they are more exposed to audit failures. We received information about the number of assignments for 3,418 of the 4,076 auditors in our sample. This information was received from UC, a Swedish credit information agency. The Pearson correlation between the number of assignments and the age of the auditor is 0.17 (p-value < 0.001), showing that older auditors may be more exposed to audit failures. However, as we added the number of assignments as an additional variable into the regressions in Tables 4 and 5, the coefficients of AUDAGE are still significant at the 0.01 level in all regressions. The number of assignments also had positive coefficients significant at the 0.01 level in the regressions. The regressions in Table 4 were only run on three outcomes, because the number of assignments for auditors who had lost their certification was not available.

[21] Tables with industry distribution for the audit fee sample, descriptive statistics and a correlation matrix for included variables in the audit fee regression models is available upon request from the authors.

[22] We also calculated the variance inflation factor (VIF) in order to examine whether multicollinearity significantly influenced our empirical results. The highest VIFs in the regressions in Table 6 were 5.28 and 6.69 in Table 7, thus suggesting that multicollinearity is not a problem.

[23] We ran the regressions separately on Big 4 audit firms and Grant Thornton or BDO. LNOFFICESIZE had a positive coefficient significant at the 0.10 level in the regression on the 97 observations audited by Grant Thornton or BDO and a positive but insignificant coefficient in the regression with Big 4 audited companies in the sample.